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PREPARED UNDER THE DIRECTION OF

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H. R. WELLMAN*

PREFACE

This report presents a summary of the present available facts bearing upon the future economic conditions of important farm products in California. If farmers are to avoid losses which result from extreme expansion or contraction, these facts should be given careful consideration when increasing or decreasing acreage of crops or numbers of livestock. The statements herein necessarily represent the state point of view, and, in many instances, must be modified to meet local and individual conditions. No attempt is made to advise individual farmers as to what they should or should not do. This circular attempts to give the available facts and to analyze their probable bearing on future prices. From these, farmers may more intelligently adjust their production to market demands.

Adjustment of acreage or of breeding plans alone cannot, of course, assure satisfactory profits. Reduction in costs, improvement in quality, and efficiency in marketing are all important considerations. Even in a time of declining prices, some farmers located on land particularly suited to one crop may make more money by growing that crop than by planting another which is on a rising price level but to which the land, climate, or market facilities are ill-adapted. Farmers need to consider both the probable future prices, as discussed in this circular, and the costs of production on their own farm, or at least in their own locality. Recent cost of production studies, made in co-operation with the farm advisors' offices in various counties, are presented in Agricultural Extension Circular 24. Readers of this circular are also referred to that publication.

In the preparation of this outlook report information has been obtained from many sources. The Federal Outlook Report prepared by the Bureau of Agricultural Economics has been quoted extensively for those products grown throughout the United States. The economic

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bulletins issued by the College of Agriculture, University of California, have been invaluable. Without such detailed studies it would have been impossible to prepare outlook reports on our specialty crops. The names of these bulletins are mentioned in footnotes in connection with the discussion of the several commodities. They may be obtained from the Farm Advisor or by writing direct to the College of Agriculture. The California Cooperative Crop Reporting Service, the Federal-State Division of Markets, the Division of Agricultural Economics, University of California, many co-operative marketing associations, and commercial companies have also furnished much information.

APPLES*

Although the rate of increase in apple production is likely to be lower than during the last 10 years, the large number of trees now in commercial and small farm orchards indicates that heavy production and low prices will continue. According to the Federal Outlook Report the commercial production of apples for the country as a whole will probably increase over a period of 5 or 10 years.

A recent tree survey made in 22 of the important apple states, which produce about 80 per cent of our apples, indicates that between 25 and 30 per cent of the trees in commercial orchards were planted during the last 8 years, and that 65 to 70 per cent were planted during the last 18 years. A relatively large number of the trees in commercial orchards are in the more favored sections, and there has been a noticeable tendency toward improved methods of production in recent years. These movements will probably tend to increase the bearing life of orchards during the next several years. Based on this assumption it seems likely that the present number of young trees is sufficiently large to bring about a material increase in commercial production during the next 5 to 10 years, unless apple prices are so low as to cause neglect of the trees in some areas where costs are high or quality is low.

A large part of the increase in commercial production of the last 10 or 15 years was the result of heavy plantings in the boxed-apple states. In this region, production increased from about 19,000,000 bushels per year during the period, 1909-1913, to about 54,000,000 bushels annually during the years 1924-1928. Present indications are that apple production in the Northwest is near its peak. Production was only slightly higher during the last five years than during

* For detailed information see: Rauchenstein, Emil. Economic aspects of the apple industry. California Agr. Exp. Sta. Bul. 445. 1927.

the previous five years; in 1925 there were only one-fifth as many trees not of bearing age as there were 15 years previously; recent plantings probably have not been sufficient to maintain the number of trees in this region.

Exports of the last five crop years have averaged about 13 per cent of the United States commercial crop. Continental European markets for American apples have become increasingly important in recent years and with the more stabilized economic conditions now prevailing, should provide increasing outlets. On the other hand, little expansion in the British market is to be expected in the near future in view of the depressed industrial conditions and the large number of unemployed in some of the major industries.

In California the two most important varieties of apples are Newtown and Gravenstein. The peak of production of Newtowns has apparently been reached. According to a survey made by the California Cooperative Crop Reporting Service, which covered most of the important commercial apple producing counties of the state, 93 per cent of the total acreage of Newtowns in 1928 was in bearing while only 7 per cent was non-bearing. Furthermore 24 per cent of the bearing acreage was over 31 years old.

Although the commercial production of fall apples in the United States is likely to increase during the next few years, commercial growers of fall apples in California who are favorably located and who produce fruit of high quality at a low cost may view the future with some optimism. Plantings in general, however, should be confined to those needed for replacement purposes.

The future outlook for Gravensteins in California, however, is less favorable than for the fall varieties. In 1928, 16 per cent of the total acreage of Gravensteins in the state was not in bearing, while 21 per cent of the bearing acreage was not in full bearing. Furthermore, only 4 per cent of the bearing acreage was over 31 years old. The normal decline in bearing acreage as a result of old age is not likely to be sufficient therefore to offset more than a small part of the acreage coming into bearing. Consequently the gradual upward trend in the production of Gravensteins during the past eight years is likely to continue for some time.

There is also evidence that Gravenstein apples are meeting increasing competition from other areas. On the one hand, there has been a considerable increase in the shipments of late apples from the previous year during June, and on the other hand, there has been a substantial increase in the shipment of early apples from both the box and the barrel areas during July and August.

APRICOTS*

If favorable weather conditions prevail during the coming years, the resulting large increase in production of apricots is likely to be accompanied by a downward trend in prices. Growers should, therefore, exercise caution in any large additional plantings of apricots. If, on the other hand, the yields prevailing for the past five years prove to be a permanent rather than, as now appears, a temporary condition, further plantings in the best localities would be warranted. At the present time these considerations cannot be definitely determined.

There has been a pronounced upward trend in the bearing acreage of apricots in California during recent years. In 1918 the bearing acreage amounted to 40,900 acres, in 1928 to 85,300, an increase of 109 per cent. This substantial increase in bearing acreage, however, has not yet resulted in a corresponding increase in production, which amounted to only 43 per cent during the past ten years. The 1914-1918 average yield per acre was 3.2 tons as compared with the 1924-1928 average yield of 2.2 tons.

Part of this decline in yield is likely to be permanent. The available information indicates that the newer plantings were more generally made in sections less favorable to high production. On the other hand, a part of the decline is probably only temporary. A relatively large proportion of the trees now listed as bearing have not yet reached the age of full bearing. As these trees come into full bearing production will be correspondingly increased. In addition to the two factors mentioned above the weather conditions during the past five years have apparently been less favorable to high yields than formerly. According to data collected by the California Co-operative Crop Reporting Service the average condition of the apricot crops in the state during the past five years was only 64 per cent of a full crop, whereas the average condition during the period from 1911 to 1923 was 76 per cent of a full crop. With the probability of more favorable weather conditions during the next few years and with an increase in the average age of the trees in bearing, some increase in the average yield per acre may be expected.

In addition there will probably be a further increase in the bearing acreage during the next few years. In 1928 approximately 14,800 acres, or 15 per cent of the total acreage, were not yet in bearing.

* For detailed information see: Wellman, H. R. Apricots: Series on California crops and prices. California Agr. Exp Sta. Bul. 423. 1927.

According to the forecasts of the California Cooperative Crop Reporting Service there will be a net increase of over 7,000 acres in our bearing acreage by 1931. Taking into consideration the facts listed above it would appear that the apricot industry may be faced with the disposal of crops averaging considerably larger than ever before.

A part of the apricot crop has a three-way outlet; it may be dried, canned, or shipped fresh. During the past seven years an average of 68 per cent of the commercial crop has been dried, 29 per cent canned, and 3 per cent utilized for fresh interstate shipments. During this period there has been no significant change in the trend of crop utilization, although the proportions dried, canned, and shipped fresh have varied from year to year depending largely upon the prices offered. The possibility of increasing or decreasing the supply of each class, however, has tended to keep the average prices of the three in close adjustment over a period of years.

In 1927 and 1928 growers received around 14.5 cents a pound for dried apricots as compared with 19 cents a pound in 1926 and an average of 15.3 cents a pound from 1921 to 1926.

Foreign markets are gradually increasing their purchases of dried apricots from this country. Our exports during the fiscal years 1921-22 and 1922-23 averaged 7,000 tons. In 1926-27 and 1927-28 they averaged 10,400 tons. The proportion of our crops exported during this period, however, shows no significant change in trend. On the average around 50 per cent of our crop goes to foreign countries. Our principal foreign markets for dried apricots at the present time are Germany, Netherlands, the United Kingdom, and Canada.

Growers of canning apricots are evidently facing a period of more intensive competition in the marketing of their fruit than they have experienced in the past. Evidences of this fact have already become apparent. Although the canned pack of apricots in 1928 was one-third smaller than in 1926 or 1927, growers received only \$50 a ton as compared with \$70 a ton in 1926 and 1927 and an average of \$63 a ton since 1920. An important cause for the lower price of canning apricots this past year was the increased competition of other canned fruits, particularly peaches, which sold at low prices. Evidently consumers would not buy all of the 1927 apricot pack at the high prices which were asked at the beginning of the season when they could obtain peaches much more cheaply. Consequently prices of canned apricots began to fall and almost one-third of the 1927 pack was carried over. With the small pack in 1928, however, and with lower

prices than were asked at the beginning of the 1927 season, present indications are that practically the entire supply will be sold before next season.

In view of the prospective increase in the canned pack of competing fruits it does not appear likely that supplies of canned apricots larger than the packs of 1926 and 1927 can be sold at prices as high as the average from 1921 to 1926. Past experience indicates that consumers will buy a relatively small quantity of canned apricots at high prices, but when the apricot pack is large it is difficult to sell all of it except at lower prices, especially when there are large quantities of low-priced competing fruits on the markets.

Exports of canned apricots have not kept pace with the increase in our pack. During the past five years there has been a steady decline in the proportion of the pack exported. Only 21 per cent of the 1927 pack was exported as compared with 37 per cent of the 1923 pack.

Each year for the past three years prices of fresh apricots have been lower than in the preceding year. In 1928 prices were the lowest they have been in any year since the war. The downward trend in prices was the result of increased shipments of fresh apricots from the state and increased supplies of other fresh fruits at the time apricots were on the market.

The shipment of fresh apricots to eastern markets has afforded an outlet for only a small proportion of the crop, averaging around 3 per cent during the past seven years. The chief limiting factor in interstate shipments of fresh apricots has been the extreme perishability of the fruit. The necessity for handling them quickly makes it desirable to sell them in the few large auction markets rather than in the many private-sale markets. Consequently the distribution of fresh apricots has been limited. The widening of the markets depends mainly upon improvements in harvesting, packing, and refrigeration methods. Even if it were possible, however, to find profitable markets for double the present interstate shipments, they would provide an outlet for only an additional 5,000 tons, or a total of 6 per cent of the present commercial production.

CHERRIES*

Unless the domestic markets for maraschino and glace cherries can be greatly expanded, it does not appear that large additional plantings of Royal Ann cherries are justified. Nor, in view of the large

* This report is based largely on a study now being made by H. R. Wellman and E. W. Braun, Agricultural Extension Service, University of California.

increase in production already in prospect, does it appear that the acreage of cherries for fresh shipment can be profitably expanded, except in particularly favorable localities.

From 1921 to 1926 there was a gradual increase in the bearing acreage of cherries in California, amounting on the average to 420 acres a year. During the past two years the increase has been much more rapid, amounting to 900 acres a year. Indications are that this rapid increase will be maintained during the next few years. In 1928 there were 12,640 acres of bearing cherries in the state and 5,760 non-bearing acres. The California Cooperative Crop Reporting Service estimates that by 1931 the bearing acres will amount to 15,700 acres, an increase of 24 per cent over the bearing acreage this past year.

The production of cherries, however, has not kept pace with the increase in bearing acreage. Conditions have been unfavorable to high yields in the past few years. The average yield per acre for the state as a whole was only 1.38 tons during the past five years, whereas the average yield during the five years from 1919 to 1923 amounted to 1.63 tons. During the past five years the average condition of the crop was 59 per cent as against 79 per cent from 1919 to 1923. The available information indicates that a considerable part of the decline in yield is a temporary and not a permanent condition. Similar periods of low yields followed by periods of higher yield have occurred at two other times during the past 25 years. From 1904 to 1907 the yields were low; from 1908 to 1912 they were much higher. Again from 1913 to 1916 they were low, and from 1917 to 1923, with the exception of 1921, they were high. If the present period of low yields is followed by a period of high yields such as occurred previously, it is evident that the total production in the state will be materially increased. In addition the increase in bearing acreage will result in a further increase in production.

Fresh Cherries.—Although many of the other western states produce large quantities of sweet cherries for fresh consumption they do not come on the market until our season is completed. Consequently they do not compete to any serious extent with our fruit.

Approximately 55 per cent of the bearing acreage and 65 per cent of the non-bearing acreage of cherries in California are the black varieties which are consumed as fresh fruit.

The trend of interstate shipment of fresh cherries from this state has been upward, rising from an average of 590 cars between 1921–1923 to an average of 739 cars between 1926–1928, an increase of 25

per cent. This increase has occurred despite the abnormally low yields mentioned above. If average yields during the next few years equal those in the period from 1917 to 1923, the substantial increase in bearing acreage in prospect will apparently result in a continuation in the upward trend in interstate shipment.

So far the demand for California fresh cherries has kept pace with the trend of shipments, and as a result the level of prices has been maintained. But if the supplies increase as fast in the future as they have in the past, and it is probable that they will, it may be difficult to maintain the level of prices of recent years. The experience this past season indicates the effect of large supplies upon price. In 1928 cherry prices were lower than in any season during the past eight years with the single exception of 1925, when the quality was very poor.

Canned Cherries.—The Royal Ann cherry is the principal variety used for canning, and the major part of the Royal Ann crop is so used. As contrasted with our fresh cherries, our canned cherries come in direct competition with those packed in Oregon, Washington, Idaho, and Utah. Some of the states east of the Rocky Mountains also produce large quantities of canning cherries, but their cherries are the sour varieties. Consequently they do not compete seriously with our sweet cherries. Although there has been a slight downward trend in the canned pack in this state since 1919 there has been a pronounced upward trend in Oregon and Washington. The increase in those two states has more than offset the decline in California so that the total pack of canned cherries has increased. The average pack during the three years of 1919–1921 amounted to 716,000 cases, whereas the average pack during the past three years amounted to 893,000 cases, an increase of 25 per cent.

The increase in the pack of cherries, however, has been small as compared with the increases in most of the canned fruits. Consequently the prices of canning cherries have not declined as rapidly as the prices of other canned fruit. There has, however, been some decline. In 1928 growers received 8 cents per pound for the best grade, which was the lowest price received in the past eight years with the exception of 1921 and 1924.

Unofficial estimates indicate that there are between 2,500 and 3,000 acres of non-bearing Royal Ann trees in the four states of California, Oregon, Washington, and Idaho. When this acreage comes into bearing, production will be materially increased. It does not appear likely, however, that canning will offer an outlet for a much

larger volume of cherries than we now have at the present level of prices, particularly when there are large quantities of low-priced competing fruits on the markets.

Exports of canned cherries from the Pacific Coast ports have averaged around 30,000 cases annually during recent years. There has been no marked tendency for exports to increase. Countries in the Orient are the most important foreign markets for canned cherries exported directly from this coast. During the fiscal year 1927-28 they took over two-thirds of the total exports from San Francisco.

Maraschino Cherries.—In recent years the manufacture of maraschino and glace cherries has provided an annual outlet for more than five million pounds of sulphured and brined Royal Ann cherries that were produced on the Pacific Coast. This amount, however, has constituted only a part of the sulphured and brined cherries which the United States annually uses in the manufacture of maraschino and glace cherries. During the three years of 1925-1927 the total importations of cherries, most of which were sulphured and brined cherries that had been stemmed and pitted, amounted to an average of 18,438,000 pounds a year.

GRAPES*

The outlook for additional plantings of grapes is decidedly unfavorable. The present unsatisfactory price situation is likely to continue until material reductions are made in the acreage or very large additional markets are developed. Because of the ease with which certain varieties of grapes can be utilized for raisin, table consumption, or juice, any substantial change in the price of one class of grapes is likely to be reflected in the prices of the other classes.

The 1928 grape season was the most unprofitable that has been experienced in many years. The market was demoralized throughout practically the entire season. Many factors of a more or less temporary nature undoubtedly contributed to the very low prices this past season, but the fundamental cause of the low level of prices which has prevailed in recent years was the enormous increase in production.

The total production of grapes of all varieties on a fresh basis averaged around 1,230,000 tons during the three years of 1919 to 1921, as against an average of 2,290,000 tons during the past three years. In 1920 the total bearing acreage of grapes in the state

* For detailed information see: Shear, S. W., and H. F. Gould. Economic status of the grape industry. California Agr. Exp. Sta. Bul. 429. 1927.

amounted to 346,000 acres; by 1927 it had increased to 658,500 acres. In 1928 the bearing acreage was about 2,000 acres less than in 1927.

Raisins.—Raisin grape growers were the first to feel the effects of the enormous increase in production. In 1922, when the crop amounted to 237,000 tons as compared with an average crop of 168,000 tons during the previous three years, the average price of the principal raisin varieties dropped to 3.2 cents a pound. With crops even larger than in 1922 during four of the past six years the level of prices has been unprofitably low for the majority of the growers. In addition to the increased production of raisins in California there was a substantial expansion in production elsewhere in the world, particularly in Australia. Despite the larger production in foreign countries, however, our exports have increased remarkably in recent years. Our average exports during the three years of 1922–23 to 1924–25 amounted to about 50,000 tons; in 1926–27 they amounted to 73,000 tons; and in 1927–28, to 104,800 tons. A considerable part of this increase has apparently been the result of the activities of the Sun-Maid Raisin Growers of California.

Some improvement in the raisin situation is in prospect during the coming years. The bearing acreage of raisins in this state, which practically doubled between 1919 and 1925, reached the peak in 1926. In that year there were about 350,700 acres in bearing. Since 1926 the bearing acreage has experienced a gradual decline. This past year there were 9,000 acres less in bearing than in 1926, a decrease of 2.6 per cent. This downward trend is expected to continue during the next few years. According to the forecasts of the California Cooperative Crop Reporting Service there will be a further decrease of approximately 10,000 acres, or 3 per cent, by 1930. Unless this prospective rate of decline in bearing acreage is greatly accelerated, however, only a small improvement can be expected. Before the industry will again be on a profitable basis a material reduction in acreage is needed.

The relatively low prices of raisins since 1922 led to a substantial increase in the fresh shipments of both Thompson Seedless and Muscats. According to estimates of the California Cooperative Crop Reporting Service an average of 55,000 tons of raisin grapes were marketed fresh during the three years of 1920–1922, as against an average of 277,000 tons during the three years of 1926–1928. The total fresh shipment in carlots of Muscats and Thompson Seedless has increased from 4,700 cars in 1921 to an average of 17,400 cars during the past three years.

This large increase in the fresh shipments of raisin grapes relieved the raisin situation to some extent but augmented the rapidly increasing shipments of table and juice stock. The total interstate shipments of fresh grapes rose steadily from 30,200 cars in 1921 to 71,099 cars in 1925. Since 1925 the upward trend has been less rapid than before. In 1927 shipments amounted to 73,094 cars, and in 1928 to the equivalent of over 75,000 cars of 26,000 pounds minimum carload weight.

Table Grapes.—The prices of the two principal varieties of table grapes have been low for the past four years, averaging around 52 cents a lug f.o.b. for Malagas and 70 cents a lug f.o.b. for Tokays. In 1928 the average f.o.b. price for Malagas was 48 cents a lug and for Tokays 60 cents a lug. As compared with the 1927 prices, Malagas and Tokays suffered less than most other varieties.

The bearing acreage of table grapes in the state increased from 60,000 acres in 1921 to 144,500 acres in 1927, when the peak in bearing acreage was reached. In 1928 the bearing acreage was 3,400 acres smaller than in 1927. This downward trend is likely to be continued during the next few years, although the amount of the decline from 1928 to 1930 is estimated to be only 2,000 acres, or 1.5 per cent.

Juice Grapes.—Until recently juice grapes have been in a more favorable price position than raisin or table grapes. The expansion in the bearing acreage of juice grapes did not occur until several years after the expansion in the other classes of grapes. From 1920 to 1924 the bearing acreage of juice grapes increased 21,700 acres; from 1924 to 1928, 52,000 acres. This great expansion in bearing acreage has resulted in increasingly heavy supplies and declining prices during recent years. The average f.o.b. prices of the three principal varieties of juice grapes (Alicantes, Zinfandels, and Carriganes) in 1926 and 1927 amounted to 69 cents a lug as compared with an average of 94 cents a lug during the previous four years. In 1928 the prices were very low, averaging only 38 cents a lug. Of the three varieties Alicantes have consistently brought higher prices but the proportional decline in their price has been as great as for the other two varieties.

According to a recent report of the Bureau of Agricultural Economics the very low prices of juice stock in 1928 were largely a result of the unregulated shipments. "If the supplies had been held down in the terminal markets and fed into them in reasonable quantities as the demand developed it is probable that an equal volume of fruit could have been unloaded at prices equal to those received in 1927."

But it does not seem likely that the average level of prices during the next few years can be maintained above the 1927 level unless the demand is greatly increased or the supplies reduced. The present indications, however, are that the available supplies of juice stock may even be increased during the next few years, since the bearing acreage of juice grapes will probably be around 7,000 acres larger in 1930 than it was in 1928.

PEACHES*

Clingstone.—In view of the low prices of canning peaches during the past two years together with the large increase in production which is in prospect in the future it is evident that conditions are unfavorable for the planting of clingstone peaches at the present time.

During the past several years there has been a pronounced downward trend in the prices which growers have received for canning peaches. The average price in 1927 and 1928 amounted to approximately \$21 a ton, as against an average of \$46 a ton in 1921 and 1922. The chief reason for this decline in price was the enormous increase in the canned pack. During the past seven years the canned pack of peaches in this state, which produces practically all of the United States output, has doubled. Consumers would not buy twice as many canned peaches except at lower prices.

The trend of canned-peach production is likely to continue upward during the next few years. According to a survey made by the California Peach Crop Survey Committee during June, 1928, there were 71,400 acres of clingstone peaches in the counties north of the Tehachapi. In addition there were approximately 13,500 acres in southern California. Of the total acreage in the state of 84,900 acres, 69,600 were classified as bearing and 15,300 as non-bearing. Our production of 344,000 tons this past year, therefore, was produced on 82 per cent of the total acreage. Moreover, 20,200 of the 69,600 acres in bearing were only four and five years of age, and consequently produced only from one-half to two-thirds as much fruit in 1928 as they may be expected to produce when they reach the age of full bearing. Furthermore, only 20,300 acres, or 29 per cent of the total bearing acreage in 1928, were over ten years of age. It is evident, therefore, that only a part of the present non-bearing acreage will be necessary to replace the loss in acreage due to old age.

* For detailed information see: Wellman, H. R. Peaches: Series on California crops and prices. California Agr. Ext. Ser. Cir. 1. 1926.

Until the present time, the increase in the total pack of canned peaches has been retarded by the steady decline in the quantity of freestones canned. An average of 1,714,000 cases of freestones were canned in the years 1919-1921, but only 321,000 cases in 1927, and only 164,000 in 1928. Evidently only a small further decline in the freestone pack can be expected, and in some years it may even be expanded.

Exports of canned peaches from the United States during the three years of 1925-26 to 1927-28 were over 50 per cent greater than in the previous three years. The average proportion of our total pack going into export trade, however, has not changed during the past six years since production of canned peaches in the country during the three years of 1925 to 1927 was also over 50 per cent greater than that during the three years of 1922 to 1924. On the average about 15 per cent of our pack has been exported, which has amounted to around 1,864,000 cases a year during the past three years. The most important markets for our canned peaches are the United Kingdom, Canada, Cuba, and France.

Freestones.—The outlook for the planting of drying peach varieties is encouraging.

As contrasted with the rapid increase in the production of clingstone peaches during the past seven years our production of freestone peaches has actually declined. The production of freestones during the past three years has averaged 200,000 tons a year as against an average of 230,000 tons during the three years of 1921 to 1923, a decrease of 13 per cent. All of this decline has been in canning peaches. The output of dried peaches and the interstate shipments of fresh peaches have remained at approximately the same levels. If the downward trend in the production of freestones continues, however, and present indications are that it will, the production of both dried and fresh peaches in this state will tend downward.

The available figures on the acreage of freestones in California indicate that a substantial decline is in prospect during the coming years. Of the 76,682 acres of freestones in 1928, 69,581 acres, or 91 per cent, were in bearing and only 7,101 acres, or 9 per cent, were non-bearing. Furthermore, 73 per cent of the present bearing acreage is 10 years of age and older. Since the average commercial life of a peach tree is only 20 years it is evident that a considerable decrease in acreage due to old age may be expected. Nor is the number of young trees now planted sufficient to replace the loss which will normally occur in the old trees.

The decline in the bearing acreage of the principal drying varieties is likely to be more rapid than the decline in the principal shipping varieties. Muirs and Lovells are the main varieties utilized for drying. Muirs are primarily used only for drying while Lovells are also used for fresh shipments. The Elberta, however, is easily the most important of the shipping varieties making up perhaps 80 per cent of the total. These three varieties constitute 82 per cent of the total freestone peach acreage in the state. During the next few years the decline in the bearing acreage is likely to be the most rapid in Muirs and the least rapid in Elbertas. At the present time 95 per cent of the total acreage of Muirs, 93 per cent of the total acreage of Lovells, and 90 per cent of the total acreage of Elbertas are in bearing, while 82 per cent of the bearing acreage of Muirs, 68 per cent of the bearing acreage of Lovells and 65 per cent of the bearing acreage of Elbertas are 10 years of age and older.

The decline in the bearing acreage of the main drying varieties may not, however, result in a corresponding decline in the output of dried peaches, because of the possibility of drying a larger proportion of some of the varieties now shipped fresh. But even if that is done it is not likely that it will fully compensate for the decline in the production of Muirs. Consequently some decline in the dried peach output in this state is in prospect.

From 1921 to 1928 the production of dried peaches has fluctuated around 23,000 tons. There has been no upward or downward trend in production during this period. Likewise there has been no upward or downward trend in the average prices paid to growers. Prices have fluctuated around 7 cents a pound, which was also the average price received in both 1927 and 1928.

Exports of dried peaches during the past two years were larger than in any year since 1919 with the single exception of 1923. The proportion of our total dried pack exported has also increased, particularly during the past four years. Approximately 19 per cent of the 1927 crop was exported, as compared with 12.4 per cent of the 1926 crop, 10.3 per cent of the 1925 crop, and 9.5 per cent of the 1924 crop. At the present time Germany, Canada, and the United Kingdom are the most important foreign markets for our dried peaches.

The production of fresh peaches in the United States is likely to continue heavy for the next few seasons whenever weather conditions are favorable. In the South, production has increased greatly in recent years.

The extent of the increase is indicated by the carload shipments from seven important southern states, which averaged 68 per cent

more for the last four years than for the previous four-year period. The peach tree survey of 1925 indicated that two-thirds of the commercial trees in these seven states were not over five years of age. The majority of this group is now not far from the maximum bearing age.

In some southern districts, particularly in Georgia, many of the poorer orchards have been pulled out or abandoned. Plantings in recent years have not been sufficient to replace trees eliminated. Disease, neglect, and age have reduced the productive power of many trees. Much of the tree mortality in Georgia has occurred in the southern part of the belt, from which the earliest shipments are made, whereas in the north central part of the state there may be some further increase in production.

Indications are that some reduction in bearing acreage in the southern states will continue, and that as the large number of trees now in their prime decline in productivity, a considerable decrease from present bearing capacity will result.

It would appear from these facts that only those growers of peaches for fresh shipment who are able to produce peaches of high quality at a relatively low cost are justified in planting sufficient trees for replacement purposes.

PEARS*

The prospective increase in the production of pears is likely to be sufficient to cause a downward trend in prices during the coming years. A general curtailment of plantings of both Bartlett's and late varieties in this state, therefore, seems desirable. Only in those localities in which high quality pears can be grown profitably at prices considerably below the average of recent years are additional plantings likely to be warranted.

There has been a pronounced upward trend in the bearing acreage and production of pears in California during recent years. In 1921 the bearing acreage amounted to 31,434 acres, in 1928 to 62,521 acres, an increase of 31,087 acres or almost 100 per cent. Production has practically kept pace with the increase in bearing acreage. The average production during the three years of 1920-1922 amounted to 113,000 tons as against an average of 202,000 tons during the past three years. The production in 1928 is estimated to be 219,000 tons, which is the largest crop ever produced in the state.

* For detailed information see: Shear, S. W. Economic aspects of the pear industry, California Agr. Exp. Sta. Bul. 452. 1928.

The Bartlett pear, which is the predominant variety grown in the state—in 1928, 92 per cent of the total bearing acreage of pears was in Bartletts—has a three-way outlet: it may be shipped fresh, dried, or canned. During the past four years 53 per cent of the commercial crop has been shipped fresh, 34 per cent canned, and 13 per cent dried. Since 1920 there has been no noticeable tendency for a larger or a smaller proportion of the crop to be utilized in one way than in another. Each of the three classes has experienced about the same percentage increase. The actual increase in number of tons has of course been greatest in fresh shipments because they constitute such a large proportion of the crop.

The available evidence indicates that the upward trend in production will continue for some time. In 1928 there were 80,754 acres of Bartlett pears in California, of which 23,474 acres, or 29 per cent, were not yet in bearing. Furthermore, a considerable proportion of the present bearing acreage has not yet reached the age of maximum bearing. Approximately 59 per cent of the total bearing acreage in the state in 1928 was less than 15 years of age, while only 26 per cent was between 14 and 28 years of age, and only 14 per cent over 29 years of age. Since the pear tree is long-lived it is evident that the present non-bearing acreage is much greater than is necessary for replacements.

The canned pack of pears in California has increased from an average of 1,256,486 cases in 1920–1922 to an average of 2,103,604 cases during the past three years. In addition there have been large increases in both Oregon and Washington. The total increase in the canned pear pack on the Pacific Coast between 1920–1922 and 1926–1928 has amounted to 1,685,590 cases or 94 per cent.

This rapid increase has resulted in a downward trend in the prices which growers have received for canning Bartletts. The average price during the two years of 1921 and 1922 amounted to \$68 a ton as against an average of \$43 a ton in 1927 and 1928—a decrease of 37 per cent. It is evident that with the much larger supplies of other canned fruit available, the consumers would not buy nearly twice as many canned pears except at lower prices.

Exports of canned pears have increased in about the same proportion as the pack. On the average about one-half of the total pack goes to foreign markets. The United Kingdom, our principal foreign market for canned pears, has taken an average of about 87 per cent of our total exports in recent years.

The interstate shipments of fresh pears from California, which include a small proportion of fall and winter varieties, have risen from an average of 4,858 cars in 1920-1922 to an average of 9,200 cars in 1926-1928. This rapid increase has resulted in a slight downward trend in prices. The average delivered-auction price of California pears in 1928 amounted to \$2.94 a box as compared with an average price of \$3.28 from 1921 to 1924. With interstate shipments of 8,146 cars in 1927 the delivered-auction price was \$3.32 a box. This high price, however, was in part the result of a short crop in practically all fruits. In 1926, when our interstate shipments of pears were even larger than in 1928, and the total fruit crop was also very large, the delivered-auction price was only \$2.65 a box.

Fortunately California fresh Bartlett pears meet with little competition from those produced elsewhere during the most of our shipping season. By the end of August the bulk of our Bartletts have been shipped. Pears from Oregon and Washington do not move in large volume until the middle of August, and eastern pears do not move until September. Consequently the chief factor on the supply side which affects the price of our Bartletts is the volume of shipments from this state. Shear found that 90 per cent of the changes in the weekly delivered-auction prices of our Bartletts in New York City in 1925 and 1926 were accounted for by variations in the shipments of pears from this state two weeks previously.

Our shipments of fall and winter varieties, however, do come in competition with pears produced in other states. Shear points out that "Although the better late varieties, such as Bosc and Anjou, have commanded a high premium over Bartlett pears in Eastern markets during the last ten years, a considerable part of it is absorbed by cold storage charges. Furthermore, the premium has already begun to decrease and will probably continue to do so for some time, because of the increasing production."

In California there has been a heavy planting of late varieties during recent years. In 1928, 56 per cent of 12,000 acres of late varieties in California were not in bearing. Furthermore, only 9 per cent of the bearing acreage was over 28 years of age while 71 per cent was less than 14 years of age.

PLUMS*

The large increase in the production of plums which is in prospect in this state indicates the need for caution in additional plantings.

Between 1920 and 1928 the bearing acreage of plums in California doubled, and indications point to a still further increase during the next few years. At the present time there are 34,900 bearing acres and 6,700 non-bearing acres of plums in California. According to the forecasts of the California Cooperative crop Reporting Service the bearing acreage is expected to reach 39,300 acres by 1931, an increase of 4,400 acres or 26 per cent over the present bearing acreage.

Although plums are produced in other parts of the country, particularly in the Pacific Northwest, they do not compete seriously with California fresh plums, the bulk of which are shipped during the three months of May, June, and July. During this period there are practically no shipments from other states. By the time their shipments become heavy our plums are practically out of the markets.

The trend of interstate shipments of fresh plums from California has also shown a marked increase, rising from an average of 3,065 cars in 1920-1922 to an average of 4,508 cars in 1926-1928.

Despite the large increase in shipments, however, the trend of prices has not been downward. This is evidence that there has been a substantial increase in the demand for fresh plums in this country.

Whether the demand for our fresh plums will continue to increase as rapidly as it has in the past is questionable. Certainly we cannot expect such an increase to continue indefinitely. Judging from the experience of the past eight years it is not likely that the increase in demand during the next few years will be more than sufficient to offset the probable increase in production. Consequently growers should not expect prices to average higher than they have in recent years, and there may even be some decline.

The fluctuations from year to year in the average prices which California growers receive for their plums are caused in the main by changes in the volume of shipments from this state although the volume of competing fruits in the markets also has some effect. In 1923 and 1926, for example, prices were very low and shipments were unusually large. On the other hand, in 1924 and 1927 shipments were small and prices were high. In 1928 prices were 30 cents a crate lower on the average than in 1927 although shipments were only

*For detailed information see: Rauchenstein, Emil. Economic aspects of the fresh plum industry, California Agr. Exp. Sta. Bul. 459. 1928.

slightly larger. The principal reason for that situation was the much larger quantity of other fresh fruits on the markets during our plum shipping season in 1928 than in 1927.

A small quantity of California plums are canned each year, amounting on the average to around 5 per cent of the crop. There has been no apparent tendency during recent years for our canned pack to increase, although there has been a material increase in the canned pack of plums and prunes in the Pacific Northwest. With the steadily increasing supply of other canned fruits it does not appear that canning will offer an outlet for any substantial increase in the production of plums except at lower prices.

PRUNES*

An abnormally small world crop of prunes resulted in growers receiving noticeably higher prices for the 1928 crop than for the 1926 and 1927 crops. However, this improvement in prices is of a temporary nature as the bearing acreage of prunes is increasing, and production will probably be considerably greater during the next few years than the average of recent years.

The 1928 world commercial crop of prunes is now estimated at about 225,000 tons, compared with 269,000 in 1927, 256,000 in 1926 and a three-year average of 250,000 tons. Yields per acre in every producing section were smaller in 1928 than in 1927. California's 1928 yields, although about average, were approximately 10 per cent smaller than the bumper crop of 1927. Yugoslavia's exportable surplus is estimated at about two-thirds of normal while the crops of France and the Pacific Northwest were almost complete failures.

The preliminary estimates for 1928 indicate a crop in the Pacific Northwest of less than 3,000 tons compared with 23,000 tons in 1927 and an average of 24,000 tons for the last three years, and a crop of 1,500 tons in France as against about 9,000 tons in 1927 and a three-year average of nearly 7,000 tons. Yugoslavia's exportable surplus is now estimated at about 28,000 tons as against exports of 34,000 tons in 1927 and a three-year average of 38,000 tons. Preliminary estimates of California production stand at 193,000 tons in 1928 and an average of 182,000 tons for the last three years.

During recent years there has been a pronounced upward trend in the world output of prunes. The average world commercial production (excluding Jugoslavian domestic consumption) during the

* For detailed information see: Shear, S. W. Prune supply and price situation. California Agr. Exp. Sta. Bul. 462. 1928.

past three years amounted to 250,000 tons, as against an average of 184,000 tons during the three years of 1920-1922, an increase of 36 per cent. California and the Pacific Northwest have been responsible for practically all of this increase. There has been no apparent upward trend in production in either Yugoslavia or France.

In California production increased from an average of 109,000 tons in 1920-1922 to an average of 182,000 tons in 1926-1928. Indications are that this upward trend will continue during the next few years, although probably not as rapidly as previously. In 1928 there were 172,000 bearing acres and 23,800 non-bearing acres of prunes in this state. According to the forecasts of the California Cooperative Crop Reporting Service this will mean a net increase in the bearing acreage of 10,000 acres by 1931. During the three years from 1925 to 1928, however, the net increase in bearing acreage amounted to 33,000 acres, and in the three years before that to 28,000 acres.

Production in the Pacific Northwest varies greatly from year to year but has averaged about 24,000 tons during the last three years, compared with approximately 22,000 tons in the years 1920-1922. Although no increase in the number of bearing trees is expected, future production is likely to average somewhat higher as about one-fourth of the acreage had not yet reached the age of full bearing in 1927.

On the other hand, there seems to be no prospect for an increase in the production of prunes in France. In Yugoslavia, however, there is a possibility that the output of dried prunes may be increased during the next few years although the evidence regarding this point is conflicting. On the whole the world output of prunes may be expected to increase by approximately the amount of the increase on our Pacific Coast.

As a result of the upward trend in the world output of prunes since 1920 the trend of prices to California growers has been downward, falling from an average of 8.4 cents a pound for 40-50s in 1921-1923 to an average of 5.6 cents a pound for 40-50s in 1926-1928. If the large production which is in prospect develops, it is not likely that the average prices during the next few years will be above the average of the past three years. Even to maintain that average in face of increasing production it will be necessary to widen the outlet for our prunes both here and abroad.

During the past five years an average of approximately 50 per cent of the United States prune crop has been exported. The principal foreign markets for our prunes, in order of their importance,

are Germany, the United Kingdom, France, and Canada. On the average these four countries have taken around 70 per cent of our total exports. In Germany, which alone takes about 27 per cent of our total exports, our prunes meet with keen competition from those produced in Yugoslavia. In six of the last eight years Germany has received a larger volume of prunes from Yugoslavia than from the United States. On the other hand, all of the Canadian imports and 90 per cent of the British and French imports are from this country.

ORANGES*

Navels.—In view of the large prospective increase in the shipments of both oranges and grapefruit at the time California Navel oranges are marketed, it does not appear that the very favorable price level of the past four years can be maintained.

The period from 1924–25 to 1927–28 has apparently been the most prosperous four year period in the history of the Navel orange industry of this state. One reason for the relatively high prices of Navel oranges has been the substantial increase in the demand for oranges during our Navel season. The per capita consumption of winter oranges has been fully as large during the past four years as it was between 1913–14 and 1916–17 and yet the average f.o.b. prices, after correcting for changes in the general price level, have been over 60 per cent higher.

A second reason for the high prices during recent years has been the small orange crops in Florida. The bulk of the Florida oranges are shipped during the seven months of November to May. Consequently they compete directly with our Navels in the consuming markets. Conditions in Florida with respect to yield per acre have apparently been below normal during the past four years. The small crops in 1924–25 and 1925–26 were largely the result of neglect arising out of the real estate boom; the 1926–27 crop was injured by frost and hurricane; and the 1927–28 crop, by frost and drought. If the factors which caused four successive low crops in Florida do not continue, the yield per acre will be substantially higher. In addition, there has been a substantial increase in the bearing acreage of oranges in Florida. In 1928 the bearing acreage amounted to 155,000 acres, nearly double the bearing acreage which produced the last large crop in that state (the 1923–24 crop). Furthermore, it is likely that the

* For detailed information see: Wellman, H. R. and E. W. Braun. Oranges; Series on California crops and prices. California Agr. Exp. Sta. Bul. 457. 1928.

bearing acreage will be even larger during the next few years than at present, since approximately 40,000 acres have not yet come into bearing.

There is also likely to be some increase in the production of oranges in Texas. The shipping season in that state is during the winter and spring months. According to a recent survey there were approximately 13,600 acres of oranges in the Lower Rio Grande Valley of Texas in 1928, of which only 20 per cent were in bearing.

In addition, the large prospective increase in the shipments of grapefruit during the winter and spring months will probably add further to the competition of our Navels (see page 25).

Valencias.—The economic conditions in the Valencia orange industry are likely to be as favorable during the coming years as they have been on the average during recent years.

Fortunately the prospective increase in the production of oranges and grapefruit in the other states of the Union will probably not affect the prices of our Valencias except during April and May. Our Valencias are practically the only oranges on the market during most of their shipping season.

During recent years there has been a marked upward trend in both the shipments and prices of Valencias. People are not only eating more oranges during the summer months than ever before but they are paying more for them as well.

The unusually high prices received for Valencias the past season—which were 42 per cent above the average of the previous four years—were in part the result of a short crop. The shipments of Valencias in 1928 amounted to 9,255,000 boxes, as compared with 12,140,000 boxes in 1927, and 11,212,000 boxes in 1926. There is also evidence that there was a further increase in the demand for Valencias.

Whether the upward trend in prices during recent years will continue for the next few years is open to question. The shipments of Valencias will probably be considerably larger on the average during the coming years than they were in either 1926 or 1927, since approximately 14 per cent of the present bearing acreage in the state is not yet in bearing, and an even larger proportion has not reached the age of maximum bearing. On the other hand the price level of recent years can probably be maintained, provided no boom in planting occurs. The demand for Valencias has increased steadily and there are as yet no indications that the saturation point has been reached. It is evident, however, that continued effort along the lines of developing new outlets, extensive advertising, and improving the quality will be needed in order to maintain the present price level.

GRAPEFRUIT*

The available facts indicate that California grapefruit growers are likely to experience much greater competition during the winter and spring months in the coming years than they have in recent years. Growers of summer grapefruit are in a more favorable position.

The bulk of the grapefruit from Florida, Texas, and Arizona is shipped during the eight months of October to May. This is also the period when grapefruit from the Imperial Valley and central California is shipped.

The carlot shipments of grapefruit from Florida, which produces around 90 per cent of the nation's supply of grapefruit at the present time, have been below normal during the past three years. From 1920-21 to 1924-25 shipments in Florida increased from 11,115 cars to 20,087 cars. In 1925-26 they amounted to only 14,269 cars, in 1926-27 to 17,272 cars, and in 1927-28 to 14,184 cars. The bearing acreage of grapefruit in Florida, which increased from 47,000 acres in 1921 to 56,800 acres in 1925, has continued upward, however. In 1928 the bearing acreage amounted to 103,800 acres according to a survey made by the State Plant Board of Florida. It is evident from these figures that the average yields per acre have been much lower during the past three years than they were during the previous five years. The same conditions which caused the low yields of oranges in Florida (see page 23) were also largely responsible for the low yields of grapefruit. With more favorable conditions the average yield per acre may be substantially higher during the coming years. Furthermore, a considerable proportion of the present bearing acreage has not yet reached the age of maximum bearing. Consequently the full effects of the recent increase in bearing acreage upon production have not yet been felt.

On the other hand only a small increase in bearing acreage in Florida is in prospect during the next few years. The present non-bearing acreage in that state amounts to about 8,000 acres.

Carlot shipments of grapefruit from Texas have increased from only 8 cars in 1921-22 to over 1,000 cars in 1927-28. This upward trend is likely to continue. According to a recent census there were 34,440 acres of grapefruit in the lower Rio Grande Valley in 1928, only 14 per cent of which were in bearing.

* For detailed information see: Wellman, H. R. and E. W. Braun. Grapefruit; Series on California crops and prices. California Agr. Exp. Sta. Bul. 463. 1928.

Arizona is also likely to become an important factor in grapefruit production. Only half of the acreage in that state is in bearing. Furthermore, large plantings are in prospect during the coming years.

Most of the increase in the bearing acreage of grapefruit in California during recent years has occurred in the Imperial Valley. In 1925 there were only 500 acres in bearing in that valley; in 1928 there were 3,800 acres. During the next few years there is likely to be a further substantial increase in bearing acreage since there are nearly 3,000 acres not yet in bearing in that valley.

The demand for winter grapefruit has increased substantially during recent years both in this country and in the United Kingdom and a further increase may be expected. It is questionable, however, if the demand will be increased as rapidly as supplies are likely to increase.

There have been practically no plantings of grapefruit in sections which ship during the summer months. Consequently the supplies of fresh summer grapefruit are not likely to increase. If a very large expansion in the canning of grapefruit occurs, however, it will tend to extend the marketing of winter grapefruit into the summer months.

LEMONS*

On the whole the economic conditions in the lemon industry are likely to be more favorable during the coming years than they have been in recent years

The available information indicates that lemon production in this state is now at about the peak. While there may be a further increase in the average yield per acre due to the increased age of the trees, it is not likely to be large, and it will probably be largely offset by a decrease in bearing acreage. Since 1925 the trend of bearing acreage has been downward, falling from 44,270 acres in 1925 to 42,860 acres in 1928. This downward trend is likely to continue during the next few years at least, since the present non-bearing acreage amounts to less than 2,700 acres, which is not sufficient for normal replacements. It should not be expected, however, that this downward trend will be rapid. Decreases in the acreage of tree fruits take place slowly.

With imports of lemons around 1,000,000 boxes—the average of the past five years—our present production is in excess of demand, however. In recent years when our crop has been average or above we have produced more lemons than could be sold at prices which

* For detailed information see: Wellman, H. R. and E. W. Braun. Lemons; Series on California crops and prices. California Agr. Exp. Sta. Bul. 460. 1928.

would return a satisfactory profit to growers. Consequently it has been necessary in years of large production to ship only a part of the crop and send the remainder to by-product plants on a salvage basis.

Fortunately for the welfare of the entire lemon industry the California Fruit Growers Exchange has been able to regulate shipments sufficiently to avoid extreme disaster in years of large crops. If all of the lemons that were produced in this state during the two years of 1925-26 and 1926-27 had been shipped, it would have resulted in a very much smaller gross return than was received. The experience during the past twenty years has been that a small crop brings a larger total return than a large crop, other things such as imports and temperatures being equal. The principal reason for this is that the demand for lemons is relatively inelastic. With a given demand situation a material decline in price is necessary in order to dispose of a surplus because consumption does not respond promptly to a lowering of price. On the other hand, a comparatively small shortage in supply will cause prices to rise rapidly because such a rise does not greatly retard consumption.

The disposal of merchantable fruit by sending it to by-product plants, however, is a temporary and not a permanent solution of the problem. A permanent solution requires either a decrease in imports or a reduction in acreage. By reducing the acreage the same results could be obtained as by limiting shipments. Furthermore, the costs of growing the fruit now sent to by-product plants could be saved.

There has been some increase in the demand for lemons in this country which has been manifested by an increase in the per capita consumption of lemons. From 1908 to 1917 the per capita consumption averaged around 13.4 lemons annually; during recent years it has averaged around 16 lemons annually, an increase of 19 per cent. Past experience indicates that it is very difficult to increase the demand for lemons. In view of the difficulties involved, however, real progress has been made, and much of this progress can be attributed to the activities of the California Fruit Growers Exchange. With continued effort some further increase in demand can probably be effected, although such progress will be slow as judged by the experience of the past twenty years.

ALMONDS*

The California almond industry has practically emerged from the price depression which was most acute in 1920. The principal conditions responsible for the recovery appear to be of a fairly permanent nature. The present favorable price position, therefore, can probably be maintained during the coming years, provided plantings are not greatly increased.

During the past eight years there has been a gradual upward trend in the prices paid to growers, rising from 14.8 cents a pound in 1921 to about 17.5 cents a pound in 1928. The chief factor responsible for this upward trend was the decrease in the supply of almonds available for consumption in the United States.

The total United States supply of almonds, in equivalent of unshelled almonds, declined from an average of 46,700 tons in 1921-1922 to an average of 39,680 tons in 1926-1927. This decline occurred despite a substantial increase in the production of almonds in California, which is the only state in the Union in which this crop is grown commercially. Our production in 1921 and 1922 averaged around 7,250 tons a year, in 1927 it amounted to 12,000 tons, and in 1928 to 13,700 tons. This increase in domestic production was not sufficient, however, to offset the large decrease in imports which fell from 42,234 tons, in equivalent of unshelled almonds, in 1921-22 to 23,808 tons in 1926-27.

Three factors were mainly responsible for this large decline in imports: (1) increase in the tariff, (2) recovery of European markets, and (3) increase in the domestic demand for California shelled almonds.

1. In 1922 the tariff on shelled almonds was increased from 4 cents a pound to 14 cents a pound, and on unshelled almonds from 3 cents a pound to 4.75 cents a pound. Since approximately 95 per cent of the total imports are shelled, the increase of 10 cents a pound in the tariff tended to make it more difficult for foreign producers to sell almonds in this country.

2. Some of the European countries which greatly reduced their purchases of almonds during and immediately after the war have come back into the market. Consequently a larger proportion of the almond exports from Italy and Spain has gone to these countries and a smaller proportion to the United States.

* For detailed information see: Wellman, H. R. and E. W. Braun. Almonds; Series on California crops and prices. California Agr. Exp. Sta. Bul. 453. 1928.

3. Through the efforts of the marketing organizations in this state, California shelled almonds are apparently being more favorably received than ever before. The California Almond Growers Exchange reports the sale of 1,825 tons of shelled almonds in 1927 as compared with 1,073 tons in 1923.

It should not be assumed, however, that the downward trend in imports will continue during the next few years. It is probable that the most pronounced effect of the first two of the factors mentioned above has already occurred. The rise in almond prices in this country has made it easier for importers to pay the additional tariff duty. European markets have made a considerable recovery, and it is not likely that they will increase their purchases of almonds as much during the next few years as they have in the past few years. In fact, the continuous decline in imports from 1921-22 to 1926-27 has already been checked. In 1927-28 imports were 16 per cent larger than in 1926-27 and only 7 per cent smaller than in 1925-26. This last year was the first time in six years that imports were not smaller than in the preceding year.

Furthermore, the present normal production in the main foreign almond-producing countries is fully as large as it was a few years ago, and there is no available evidence that there will be any marked downward trend in their production within the near future. Most of these countries produce a much larger volume of almonds than they consume; consequently the surplus must be sold in other countries. The United States has long been an important market for a portion of that surplus.

There may be a further increase in the trend of almond production in this state, but it is not likely to be large. The crop of 13,700 tons in 1928 was produced on 92,159 acres. The bearing acreage this year is estimated to be about 95,500 acres, 3.6 per cent larger than last year. During the next few years, however, it is not probable that there will be any further increase in the bearing acreage and there may even be a small decline. The plantings of almonds in this state since 1923 have been relatively small, and it is doubtful if they will fully replace the acreage which will normally go out of bearing. On the other hand, the average yield per acre for the state as a whole may be somewhat larger during the next few years than it has been in recent years because of the increase in the average age of the trees.

From the foregoing analysis of imports and domestic production it would appear that the national supply of almonds will tend to fluctuate about the present level during the coming years instead of

continuing downward as before. Under such conditions we cannot expect the trend of prices to continue upward, unless the demand for almonds is greatly increased.

Just how much effect the prospective increase in the production of walnuts and pecans will have upon the demand for almonds is not certain. It seems probable, however, that almonds will be subjected to keener competition in the consuming markets during the coming years than they have been in the past. Heavy plantings of walnuts have been made in California during recent years, a substantial part of which has not reached the age of full bearing (see page 31). Pecan acreage in the southern states, particularly in Georgia and Texas, has also been increasing very fast. In 1924 over one-half of the total pecan acreage in the United States was not yet in bearing.

While any widespread planting of almonds does not appear to be justified in view of the facts stated above, a conservative expansion in the areas best adapted to this crop may be desirable.

WALNUTS*

The available facts indicate that the situation in the walnut industry is likely to be less favorable during the coming years than it has been in recent years.

California produces about 98 per cent of the nation's commercial crop of walnuts. The production in this state has increased from an average of 22,500 tons in 1920-1922 to an average of 31,500 tons in 1926-1928, an increase of 9,000 tons or 40 per cent. A part of this increase has been offset by a decline in imports of unshelled walnuts, which compete most directly with our product. Our average imports of unshelled walnuts during the three years of 1920-21 to 1922-23 amounted to 12,538 tons as against an average of 8,627 tons during the two years of 1926-27 and 1927-28. On the other hand, imports of shelled walnuts during the past two years were about 20 per cent larger than during the period from 1920-21 to 1922-23.

Most of the United States imports of walnuts come from France, Italy, and China. According to the available information some increase in walnut production is in prospect in both France and Italy.

Although the per capita consumption of walnuts in this country has increased about 8 per cent during the past six years, there has been

* This report is based largely on a study now being made by Prof. H. E. Erdman, Division of Agricultural Economics, University of California.

no downward trend in prices to growers. Instead prices have been maintained at a relatively high level. It is evident that the demand for walnuts, particularly California walnuts, has been materially increased. Much of this increase has been the result of improvement in the quality of our product and of the extensive advertising of the California Walnut Growers Association.

The relatively high prices which growers received during recent years resulted in very heavy plantings. In the past ten years close to 60,000 acres of walnuts were planted in this state. The bearing acreage of walnuts in California, which increased gradually from 1922 to 1926, experienced a very rapid increase during the past two years. In 1928 the bearing acreage amounted to 83,250 acres, as compared with 71,780 acres in 1926 and 65,530 acres in 1922. The rapid expansion of the past two years is likely to continue for some time. In 1928 there were over 46,000 acres of non-bearing trees in the state. Although some bearing orchards are being taken out in Orange and Ventura counties, that decrease, unless greatly accelerated, is not likely to offset more than a small part of the acreage coming into bearing. According to the forecast of the California Cooperative Crop Reporting Service there will be about 104,000 acres of walnuts in bearing in this state by 1931, an estimated increase of almost 21,000 acres in three years.

The continuation of the heavy plantings of walnuts will eventually lead to a period of unprofitably low prices. Already we have an acreage coming on which will be more than sufficient to supply the domestic requirements for unshelled walnuts at the present level of prices, unless there is an extraordinary increase in the demand for them. If such an increase in demand does not occur, the future trend of prices of unshelled walnuts may be expected to be downward. Furthermore, it will probably be necessary to shell a larger proportion of the crop, which would result in a further reduction in returns to growers since the sale of walnut meats has generally been less profitable than walnuts in the shell.

Another factor which growers should take into consideration in deciding whether to plant walnuts is the large increase in prospect in the production of superior quality pecans which may offer keen competition to our walnuts in the consuming markets of this country.

BEEF CATTLE*

The beef cattle industry in California is in a strong position, and there are as yet no definite indications pointing toward conditions materially less favorable during the next few years. Established cattlemen may profit by moderate expansion during the next two or three years even though prices go somewhat lower.

According to the Federal Outlook Report the number of all cattle on farms January 1, 1929 was about the same as on January 1, 1928. Total inspected cattle and calf slaughter in 1928 decreased about 1,250,000 head from that of 1927, and 2,185,000 head from the record slaughter of 1926. Apparently the present breeding herd of the country can produce enough calves to maintain cattle numbers at about the present level, and permit an inspected slaughter of domestic cattle and calves of about 13,000,000 head—the slaughter in 1928. If cattle numbers are to increase, a further reduction in slaughter will be necessary for several years to permit the building up of breeding herds. Such reduction may come in the slaughter of either cows or heifer calves, or both.

The higher prices of beef and veal in the United States resulted in larger imports in 1928 than in 1927, and as long as domestic prices remain high it may be expected that imports will continue to be about as large as in 1928. There seems to be no reason, however, to anticipate serious competition from foreign sources in our domestic markets as long as there are no changes in present regulations governing importations of meat animals and meat products into the United States. The total imports of cattle, calves, beef, and veal in 1928 were equivalent to only about 5.6 per cent of our total supply of beef and veal last year.

Prices of beef cattle have been on the upgrade since 1924 and are now probably at about the peak. When prices are at the peak of a cycle, it is not usually a good time for newcomers to enter any business. The present level of cattle prices can be expected to encourage increased cattle production if producers generally become convinced that it will be maintained for some years. The rapid advance in prices during the past two years, however, tended to increase the risks of increased production, especially on the part of new operators, and thus acted as a brake on the tendency toward expansion. In view

* For detailed information see: Voorhies, E. C. and A. B. Koughan. Economic aspects of the beef cattle industry. California Agr. Exp. Sta. Bul. 461. 1928.

of the probable steady increase in milk stock, which gives only a low beef outturn, some increase in beef cattle numbers, on the part of men now in the business, seems desirable to keep pace with increased population and to provide a per capita supply of beef at least as large as in 1928. Maintenance of the present production policy of quick turnovers by marketing at younger ages with a gradual building up of breeding herds, which makes possible more rapid readjustment to price changes, seems preferable to the more speculative one of keeping steers to an older age and heavier weight.

DAIRY*

The outlook for the dairy industry in California continues to be favorable. There are as yet no indications of any material expansion in the United States or in California. The demand for milk and milk products is strong and apparently increasing gradually.

According to the Federal Outlook Report the number of milk cows on farms is no larger than last year for the United States as a whole and only 2 per cent larger in California. The small increase in California was fully justified because of the relatively rapid increase in population in this state as compared with the rest of the country.

Although the number of yearling heifers and heifer calves being kept for milk throughout the United States is larger than a year ago, the present number is less than 1 per cent above the number ordinarily required to maintain the present number of milk cows. In California the number is probably not sufficient for ordinary replacements.

The present strong position of the beef cattle industry has reduced the incentive for owners of beef or dual purpose herds to milk their cows or to shift into definite dairy activity. The high value of dairy cows for beef has also encouraged farmers to sell a larger number of old cows. Furthermore, the beef price situation is not likely to change sufficiently to increase competition with dairying for at least two or three years.

Consumption of dairy products was maintained throughout 1928 despite the slightly higher prices which prevailed. Stocks of dairy products at the close of the year indicated no burdensome surpluses, except cheese, which accumulated throughout the summer and fall months, partially explaining the low cheese prices now prevailing.

The quantities of foreign dairy produce absorbed by our markets were somewhat lessened in 1928, while our sales of concentrated milk

* For detailed information see: Voorhies, E. C. Economic aspects of the dairy industry. California Agr. Exp. Sta. Bul. 437. 1927.

abroad increased. The net importation of dairy products into the United States on the basis of total milk equivalent was about one per cent of domestic production. It cannot be expected that this year will bring less pressure from foreign competition. Practically throughout all the year foreign dairy production was retarded by unfavorable pasture conditions and European markets were strengthened by unusual demand.

It should be recognized that prospective foreign supplies tend to limit the level to which domestic prices can rise. Furthermore, since the combined production of all dairy products in this country during recent years has averaged about 99 per cent of the total domestic consumption, a material increase in dairy herds in the nation would tend to force our products on an export basis, with resulting lower prices.

HOGS*

The hog outlook for 1929 is favorable. Farmers in California who are in a position to produce hogs may expect higher prices during the next year or two than were obtained in either 1927 or 1928. According to the Federal Outlook Report the slaughter of hogs in 1929 is expected to be considerably smaller than in 1928, with some improvement in foreign demand and no material change in domestic demand.

The pig surveys of the U. S. Department of Agriculture indicate that the combined spring and fall pig crop of 1928 was about 5,400,000 head or 6.5 per cent smaller for the United States than the crop of 1927. Information as to hog supplies for the marketing year, November 1928 to October 1929, indicates an inspected slaughter of 44,000,000 to 46,000,000 head, which compares with a slaughter of 48,100,000 for the crop year 1927-28, 43,100,000 for 1926-27, and 40,800,000 for 1925-26. This indicates a decrease for this crop-year from that of 1927-28 of from 2,000,000 to 4,000,000 head. The decrease in prospective slaughter supplies, however, is partially offset by an increase in storage supplies of pork and lard on January 1 over those of a year ago of 176,000,000 pounds, which is equivalent to about 1,100,000 hogs.

December reports on the number of sows bred, or to be bred, for spring farrow in 1929, point to a decrease in the spring pig crop, assuming a relationship between breeding intentions and actual farrowings similar to that of other years. For the Corn Belt this reduc-

* A study of the economic aspects of the hog industry is being prepared by E. C. Voorhies, Division of Agricultural Economics, University of California.

tion is indicated as from 4 to 9 per cent. If such a reduction takes place, the supply of hogs for the winter of 1929-30 will be less than for this winter.

Domestic demand for pork products this winter, as measured by the relationship between wholesale prices and the volume of products moving into consumptive channels, appears to be somewhat stronger than the relatively low demand which prevailed in late 1927 and the first half of 1928. No material change in the present level of demand seems likely during the next six months. If some slackening in demand in the winter of 1929-30 should occur as the result of decreased business activity, this will be more than offset by the probable reduction in hog supplies.

Factors affecting the foreign demand for American pork products have a more favorable aspect for the 1928-29 season than a year ago. The outstanding points are: (1) There are fewer hogs in Europe than a year ago, as is indicated by reduced numbers of breeding sows and smaller current marketings. (2) The feed supply in Europe is no larger than the relatively small supply of last year, and prices of some imported feeds are higher, all of which tend to discourage increased breeding. (3) The price level in Europe for hogs and hog products other than lard is substantially above last year. (4) The buying power on the Continent is somewhat improved and no decrease is probable in Great Britain. These favorable factors may be expected to result in an increase in export demand for American pork and lard during 1928-29 as against 1927-28.

POULTRY*

The outlook for the poultry industry in California is more favorable than in 1927, but does not warrant any material expansion. As a result of a too rapid expansion in California and throughout the United States, prices of eggs declined steadily from 1925 to 1927. During the first nine months of 1928 prices averaged higher than for the corresponding period in 1927, but during the last three months they were lower.

The prospective demand and supply situation indicates that egg prices will be lower during the first six months of 1929 than they were in 1928, but higher than they were in 1927. The 1928 storage season was generally unprofitable. Consequently the demand for eggs for storage may be considerably less during the coming season, particu-

* For detailed information see: Voorhies, E. C. The California poultry industry: A statistical study, California Agr. Exp. Sta. Bul. 413. 1926. (Out of print.)

larly for the lower grades. Prices may also be affected adversely by the unusually large stocks of both shell and frozen eggs in storage on January 1 of this year. Stocks of shell eggs were approximately 1,400,000 cases or 60 per cent larger than on January 1, 1928, while stocks of frozen eggs were 56,000,000 pounds or 19 per cent larger than last year.

A favorable factor in the situation from the longer time viewpoint is that the numbers of hens and pullets of laying age on farms in the United States January 1, 1929, were slightly smaller than a year earlier, while the number of chickens raised in 1928 was reported to be about 10 per cent less than in 1927. In California, reports from commercial hatcheries also indicate a material reduction in the number of baby chicks sold in 1928 as compared with 1927.

The best outlook for poultrymen in California is in the production of high quality eggs during the fall and winter months. The differential between the prices of high and low quality eggs has been gradually increasing, and this tendency may be expected to continue. With new regulations for the sale of eggs on a quality basis, especially in retail channels, and with more discrimination on the part of consumers, many dealers have begun to show a preference for the best packs of storage eggs whenever current receipts of fresh eggs have been irregular in quality. Furthermore, importations of dried whole eggs, frozen whole eggs, and dried yolks, which compete most severely with low quality domestic eggs, have been increasing.

SHEEP*

The available facts indicate that economic conditions in the sheep industry are likely to be less favorable during the next few years than they have been in recent years.

The number of sheep and lambs in the United States on January 1, 1929, was 47,171,000 head, 5.9 per cent larger than a year ago, and 30 per cent larger than in 1922. This large increase, however, has not yet resulted in a corresponding increase in the supplies on the market. Large numbers of ewe lambs have been kept each year in order to expand flocks. That situation, however, cannot continue indefinitely. The number of sheep in the eleven western states is probably already up to range and pasture capacity, although in Texas ranges are not yet fully stocked. Even now a dry year, such as occurred in California in 1924, would undoubtedly force large numbers on the market.

* For detailed information see: Voorhies, E. C. and W. E. Schneider. Economic aspects of the sheep industry. California Agr. Exp. Sta. Bul. (in press).

When the present tendency to build up flocks ceases, it is to be expected that the normal yearly increase will go to increase supplies of sheep and lambs for slaughter. Just when this will come is impossible to determine, but all of the facts now available indicate that it will come within the next few years.

Although the demand for lambs has increased substantially during recent years, it does not seem probable that it will increase sufficiently during the next few years to absorb the large prospective increase in supplies. Consequently prices are likely to average lower.

There is no evidence that wool prices will average higher during the next few years and some unfavorable factors are apparent. Wool production exclusive of pulled wool in the United States has steadily increased during the last 6 years, being 296,000,000 pounds in 1928, as compared with 278,000,000 pounds in 1927 and 222,000,000 pounds in 1922. Moreover, wool production in 10 countries which produce a little over two-thirds of the world's wool is estimated at 2,520,000,000 pounds for 1928-29, an increase of 6 per cent over 1927-28. All of the important wool producing countries of the Southern Hemisphere showed increases over 1927. Apparently sheep numbers in these countries at the beginning of 1929 will show an increase since recent lambing conditions were much better than they were in the preceding year when there was a prolonged drought.

The general price situation abroad while still firm on some grades is somewhat weaker than a year ago. Demand continued strong throughout 1928. At the beginning of 1928, prices abroad were maintained by the light supplies, by the economic improvement on the Continent, and by the strong demand from Japan. At the end of the year, however, prices of nearly all grades above 56's at London were several cents below those a year ago.

In view of the conditions mentioned above a policy of gradual liquidation at the favorable prices now prevailing seems desirable. California sheepmen might well consider the advisability of putting their business on a sound financial basis rather than further increasing their flocks. Certainly it is not sound for newcomers to enter the sheep business at the high prices now prevailing in the expectation that the present favorable level of prices for lambs and wool will continue indefinitely.

BEANS*

The high prices now prevailing for nearly all varieties of beans will strongly tempt growers to plant an excessive acreage this spring. These high prices were largely the result of short supplies in Europe due to crop failures and a smaller than average crop in this country. A similar situation is not likely to exist when the 1929 crop is marketed. It must be expected that a material increase in the production of beans in this country will result in lower prices. If only a moderate increase occurs, however, it is not likely to cause prices to drop to unprofitable levels. On the whole it would appear that an increase of not more than 15 per cent in the total acreage of beans planted in California in 1929 as compared with 1928 is warranted.

According to the Federal Outlook Report domestic consumption of beans is apparently increasing at the rate of over a half million bushels annually. The 1927 crop of about 16,200,000 bushels was not sufficient for domestic needs, and net imports for the year ending June 30, 1928, were 1,784,000 bushels, the largest since the World War. Development of a shortage in both the domestic and foreign supplies was followed by sharp advances in the prices of most of the commercial classes of beans early in 1928. Further advances occurred in many varieties through the 1928 crop marketing season to date.

Although the harvested acreage of dry beans in the United States as a whole was practically the same in 1928 as in 1927, there was considerable shifting of the total between states. In California the harvested acreage in 1928 was about 15 per cent less than in 1927, and production was about 8 per cent smaller. The yield per acre in 1928 was 10.6 hundred-pound bags as compared with 9.8 bags in 1927 and an average of 10.1 bags during the past six years.

The total crop of Limas and Baby Limas in 1928 amounted to 1,220,000 bags as compared with 1,385,000 bags in 1927. The carry-over into the 1928 crop year was practically negligible, whereas the carryover into the 1927 crop year amounted to 234,000 bags. These two factors, together with the general bean shortage and the national advertising of the California Lima Bean Growers Association, resulted in an increase in price of about 50 per cent over that prevailing in 1926 and 1927. The much higher prices received in 1928 will tend to stimulate larger plantings and a considerable expansion in acreage on non-irrigated land may occur if moisture conditions are favorable.

* For detailed information see: Wellman, H. R. and W. E. Braun. Beans; Series on California crops and prices. California Agr. Exp. Sta. Bul. 444. 1927.

The price of Blackeyes was approximately 50 per cent higher in 1928 than in 1927. This large increase in price was chiefly the result of a decrease in Blackeye production of about 17 per cent and a reduction of 74,000 bags in the carryover. In view of the low 1928 production it is likely that the carryover into 1929 will be less than it has been for three years. This indicates a favorable outlook for Blackeyes in 1929, provided the production does not greatly exceed 350,000 bags.

Growers received approximately 10 per cent higher prices for Pinks in 1928 than in 1927. Production of Pinks in California was about 100,000 bags or 18 per cent less than in 1927, and the carryover was 20,000 bags or 30 per cent less. The production of Pintos, the principal competitor of Pinks, decreased about 14 per cent. This decline was a result of abnormally low yields. The acreage of Pintos harvested in 1928 was 10 per cent larger than in 1927. If as large an acreage is planted in 1929 as in 1928 and yields are average or above, growers of Pinks in California may expect much keener competition than was experienced last year.

Prices of California Reds were only slightly higher than in 1927. Although in 1928 production in California was over 30 per cent smaller than the year before, the extreme expansion in Idaho resulted in an increase in total production of about 20 per cent. The relatively low prices now prevailing as compared with most other varieties that can be grown on the same land will tend to discourage growers from planting an excessive acreage in 1929.

The supplies of Red Kidneys and Cranberries seem to be fairly well adjusted to the consumptive requirements. No change in the acreage of these varieties for 1929 appears desirable unless such change is necessary in the readjustment of the acreage of competing crops on individual farms.

COTTON

It is probable that the supply and demand conditions for the 1929 crop of cotton will be about as favorable as for the 1928 crop.

In the past a price equal to that received in 1928 has not resulted in a material increase in acreage the following year. If this relationship continues, we may expect a total acreage in the United States in 1929 in the neighborhood of 47 million acres. Production in 1929 may be above or below that in 1928 depending upon the yield per acre. The yield per acre of 151.8 pounds in 1928 was 3 per cent below the average of the past six years. During the past fall boll weevils were as numerous as, and even more widely distributed than in the fall of

1927. Weevil emergence is influenced significantly by winter weather conditions and the extent of damage depends largely upon the weather during the spring and summer. So far this winter the weather in the Cotton Belt has been relatively mild.

The production of cotton in 1928 amounted to about 14,400,000 bales of 500 pounds gross weight as compared with 13,000,000 bales in 1927. The increase in production, however, was more than offset by the decrease in carryover, and as a result the total composite supply of 19,500,000 bales in 1928-29 is 1,300,000 bales less than that for the previous season.

Exports to the United Kingdom for the season to date are more than double those for corresponding months in 1927. The cotton textile industries of Germany and other central European countries show a recovery from the decline which took place in the second half of last season. Their recovery appears to be based on sound agricultural and business conditions, and stocks of finished goods have apparently been reduced. In France and Italy the condition of the cotton textile industries improved materially during the past season; at present they are operating at a high rate, and current business conditions in both countries are reported as satisfactory. The situation in the Orient is characterized by the increasing political stability of China which is making it a better market for cotton goods, and by the recent material improvement in the Japanese cotton textile industry.

CANTALOUPE*

An acreage of cantaloupes in the Imperial Valley much larger than that planted in 1928 is likely to result in unprofitable prices. In 1927, when the acreage was approximately 15 per cent larger than in 1928, growers and shippers suffered heavy losses.

The total carlot shipments of cantaloupes from the Imperial Valley decreased from 17,900 cars in 1927 to 15,800 cars in 1928. The smaller supplies for shipment resulted in a more uniform movement from day to day, thus avoiding the excessively heavy peak in 1927, which caused prices to fall to disastrously low levels. The average daily movement for the heaviest ten-day shipping period was 100 cars less in 1928 than in 1927.

The average f.o.b. price was \$1.65 per standard crate in 1928 as against \$1.45 in 1927. In 1925 and 1926, however, when shipments were 1,300 and 1,700 cars smaller than in 1928, prices averaged \$2.00 and \$1.85 per standard crate respectively.

For detailed information see: Rauchenstein, Emil. Economic aspects of the cantaloupe industry, California Agr. Exp. Sta. Bul. 419. 1927.

In central California a reduction in acreage of cantaloupes of about 10 per cent would probably give favorable results. In 1928, with an acreage approximately 20 per cent larger than in 1927 and with heavy yields, prices were unprofitably low throughout the entire season. As a result of their unfortunate experience last year, however, growers may go too far in reducing acreage in 1929 just as they did following the very low prices in 1926. It would appear that while a moderate reduction in acreage is urgently needed a drastic reduction is unnecessary.

In addition to the 4,450 acres of cantaloupes in central California in 1928, there were 2,900 acres of Honeydews and Honeyballs, and 1,500 acres of Persians and Casabas. During recent years increasing attention has been given to these melons in the western states. The total carlot shipments of them were 50 per cent larger in 1928 than in 1927. They now furnish keen competition to cantaloupes in the consuming markets.

LETTUCE*

During recent years there has been a pronounced increase in the demand for lettuce in this country. As a result, lettuce growers in California have been able to expand their production rapidly without causing a downward trend in prices. In seasons when the supplies of lettuce available for shipment have been very greatly increased, however, or when quality was poor, growers experienced heavy losses. There are indications that the demand for lettuce is still increasing. Whether it will offset the probable increases in production, however, is not known.

Winter Lettuce.—The reduction in acreage of lettuce in the Imperial Valley from 34,000 acres in 1926–27 to 22,000 acres in 1927–28 resulted in considerable improvement in prices to growers. In 1926–27 growers suffered heavy losses; in 1927–28 the season as a whole was fairly prosperous. This season (1928–29) prices to date have averaged higher than last season. Shipments from the Imperial Valley from the beginning of this season to the first of February have been about 20 per cent smaller than for the same period last year. Shipments from other sections, particularly Arizona, have been heavier, however. As a result total shipments of Iceberg lettuce since the first of December have been about equal to those of last year.

Spring Lettuce.—The 1928 California spring acreage was 23,800 acres or over 40 per cent higher than in 1927. Most of this increase

* For detailed information see: Wellman, H. R. Lettuce: Series on California crops and prices. California Agr. Ext. Ser., Cir. 5. 1926.

came in the Salinas, Watsonville, and Hollister districts, where the combined acreage was twice as large as in 1927. As a result, the total United States carlot movement of spring head lettuce was increased 25 per cent. Prices fell to an unprofitable level. It would appear that a moderate reduction in acreage in the spring lettuce area is desirable.

Summer Lettuce.—The shipments of summer (July-August) lettuce from the western states has increased from 2,800 cars in 1925 to 4,800 cars in 1928, an increase of 70 per cent. This increase has, in part, been offset by decreased summer carlot shipments in the East. The net increase amounted to only 35 per cent. During this same period the Chicago jobbing price increased 20 per cent. This indicates a real increase in demand for lettuce during the summer months. In making plans for the coming season, however, growers should recognize that the yields per acre were unusually low in 1928, and that with average yields the same acreage as last year would produce a crop 11 per cent larger.

Fall Lettuce.—The fall lettuce deal in California in 1928 was highly profitable. Prices were over 30 per cent higher than in the previous year. These high prices were largely the result of light shipments from this state, which were approximately 40 per cent smaller than in 1927. The acreage of fall lettuce in California last year amounted to 19,220 acres as compared with 21,350 acres in 1927 and yields were about 30 per cent lower. While it would appear that a moderate increase in fall acreage is warranted, an excessive increase may result in disastrously low prices.

POTATOES

California growers may expect some improvement in the potato situation in 1929 as compared with 1928. There are no indications, however, that the situation will be as favorable as in 1925 and 1926. California potato prices through the season tend to move with the level of potato prices in the main potato areas, which are dependent largely upon the size of the United States crop. The outlook for early potatoes is somewhat less favorable than for late potatoes because of the large prospective carryover of old crop potatoes.

Preliminary reports of the U. S. Department of Agriculture indicate that growers throughout the United States intend to plant an acreage 11 per cent smaller than they planted last year. If average

weather conditions are experienced this season, and yield follows the trend of recent years, a yield of about 117 bushels per acre is to be expected. If this yield is secured on an acreage 11 per cent below that available for harvest in 1928, production will be around 400,000,000 bushels, and supplies after July 1 will be about equal to the average during the last ten years. In considering prospects for next year, it should, however, be borne in mind that yields have often been relatively low when seed has been cheap and potato growers discouraged. This year, farmers are planning to use a little more seed per acre, but the crop may not receive the usual attention.

Indications of intended acreage are, of course, only approximations. However, the acreage planted to potatoes is not greatly influenced by weather conditions at planting time. Consequently the acreage planted has not usually differed far from what farmers report as intended. Two years ago the January reports indicated an intended increase in plantings of 13 per cent. Abandonment from flood, hail, and blight was rather heavy, and the increase in the estimated harvested acreage was 11.3 per cent. In January, 1928 an intended increase of 7 per cent in plantings was reported and the acreage available for harvest was increased about 10 per cent.

The early potato States that market before July have a real problem this year. On January 1, merchantable stocks in hands of growers and local dealers were close to the record January holdings of six years ago, being estimated at 131,000,000 bushels compared with about 100,000,000 bushels last year. To permit early potatoes to sell to advantage in competition with these storage potatoes, production must be reduced sufficiently to keep early potatoes in a luxury class. This was accomplished in the springs of 1923 and 1925, but in each case a radical reduction in acreage was necessary. This year growers in these early States apparently intend to decrease their acreage about 25 per cent. Such a reduction will relieve the situation, but will still leave prospects somewhat less favorable than usual.

RICE

According to the Federal Outlook Report the prospects for the rice crop are better than last year. The carryover of rice both in the Southern States and in California will be lower at the beginning of the 1929-30 season than at the beginning of the 1928-29 season. An average yield on the same acreage as last season will produce a smaller crop. With normal market conditions, therefore, the price for

the 1929 crop should be somewhat better than for the 1928 crop. The prospective improvement in the price of rice, however, is not sufficient to justify an expansion in acreage. Although the present low prices of rice in the world markets may discourage production next year in some foreign countries, it appears that over a longer period American rice producers can expect no material decline in foreign competition.

The supply of California rice available for distribution in 1928-29 was somewhat larger than in 1927-28. The 1928 production was almost 10 per cent smaller than in 1927 but the very small exports of California rice to Japan during 1927-28 season resulted in a considerable increase in the carryover. However, larger exports of California rice this season with a consequent reduction in the carryover into 1929-30 are expected. Rice production in Japan and its territories in 1928 was about 7 per cent smaller than the record crop of 1927. Further, the general economic situation in Japan appears to be better than last year. Decrease in production of rice in Spain lessens the threat of competition from that source in British Columbia. Shipments of rice to Hawaii, the principal market for California rice, have been on a considerably higher level than last year. Moreover, the fact that the quality of the 1928 California crop is good should facilitate the marketing of the product in foreign countries.

SUGAR BEETS

No material improvement in the market for sugar beets is expected in 1929. According to the Federal Outlook Report prospects point to a continuation of large world sugar production, with sugar prices at a low level through another year.

The visible supply of sugar in the most important sugar-producing countries at the beginning of the current sugar-producing season was more than 100,000 short tons greater than the visible supply at the corresponding dates in 1927-28. Estimates to date, for the 1928-29 season, indicate that the world production will be about 29,452,000 tons of raw sugar, an increase of 1,216,000 tons, or 4 per cent, over the 1927-28 season. Adding the increase in visible supply to the increase in the crop creates a total available supply of about 1,300,000 tons of sugar in excess of the supply available last year.

Production of both cane and beet sugar in foreign countries continues to expand. The crop of Java has been increasing continuously since 1919; the present crop is estimated to be one-half million tons

in excess of last year. Cuba is also harvesting a record crop. No official estimate has been made, but the trade estimates the crop at 5,320,000 tons, an increase of nearly 800,000 tons over the 1927-28 crop. The removal of restrictions on production will release the entire crop for market unless low prices discourage the grinding of the entire crop. The sugar beet acreage of Europe has more than recovered from the effects of the war. The 1928 area totaled 6,655,000 acres as compared with a pre-war (1909-1913) average of 5,315,000 acres.

These figures indicate that the world-wide tendency to expand production in both cane and beet producing areas has not yet been checked. Consequently producers in the United States may expect as great, if not greater, competition from foreign producers next season as they are experiencing in the present season.

Although prices of sugar have been low for the past four years, the annual consumption of raw sugar in the United States at present appears to be only about 1,122,000 tons, or 16 per cent more than it was four years ago. Consumption in Europe has been increasing, but world consumption can hardly be expected to increase enough in one year to use an increase of 1,300,000 tons in supplies. Under these conditions, domestic sugar producers can hardly expect any improvement in the demand for their product next season.

WHEAT

According to the Federal Outlook Report it is probable that the world supply and demand for wheat in the 1929-30 season will be somewhat more favorable for marketing the wheat crop of the United States than in the 1928-29 season. Although a considerable increase in the carryover in all surplus producing countries is expected, this is likely to be offset by a continued increase in consumption and by some curtailment in the world wheat production in 1929 as a reaction from the low prices prevailing in the 1928-29 season.

The world's demand for wheat appears to be increasing steadily. The growth of population naturally increases the demand for wheat. Further, there appears to be a definite tendency, both in Continental Europe and the Orient, to shift from the consumption of other bread-stuffs to wheat. This growth in demand is evident from the fact that the world supply last year was as great as that of 1923, but the price of wheat, both in the United States and in foreign countries, averaged

considerably higher in the 1927-28 season than in the 1923-24 season; and the 1928-29 supply, which now appears to be 5 per cent greater than the 1923-24 supply, is selling at average prices slightly above the prices prevailing through 1923-24. This is probably due to the increased purchasing power of foreign consumers, as well as growth in population and shifts from consumption of other breadstuffs. The present low prices are also likely to give an impetus to wheat consumption that will result in more than the normal average increase in demand for wheat.

Although the low prices of wheat for the present season are undoubtedly causing considerable increase in consumption, particularly for feed in this country and in Europe, some increase in the world carryover of wheat at the beginning of the 1929-30 season is to be expected. The present season also began with some increase in carryover. Taking this increase and the increased crop together, it appears that the world's supply of wheat for the 1928-29 season is about 5 per cent greater than for the 1927-28 season.

Although current low prices may check temporarily world expansion of wheat acreage, American producers are faced with a long-time tendency to continue the expansion of wheat production in many countries. There are still extensive areas in western Canada which will eventually be planted to wheat. This is also true to a lesser degree in Argentina and Australia.

BARLEY

According to the Federal Outlook Report little, if any, improvement in the market for cash barley may be expected for the 1929 crop. Exports to Europe from the 1929 harvest are not likely to be as large as from the past two crops, and there are no prospects of increased domestic requirements for feed grains. The 1928 crop was well above domestic needs because of a record acreage and yields 17 per cent above average. As a result prices declined to the lowest point since 1923, notwithstanding record shipments overseas. Relatively large stocks have accumulated in the markets, and indications are that larger quantities than usual will remain on farms and in commercial channels at the close of the season to compete with the 1929 crop.

Barley acreage in the United States in 1928 increased to 12,539,000 or nearly 2,800,000 acres above any previous year. With good yields, a crop estimated at nearly 357,000,000 bushels, or about 90,000,000 bushels more than the previous record crop of 1927, was produced.

California barley may meet slightly less competition in the world market in 1929 than was encountered by the 1928 crop. Record shipments to European markets from the large crop in the eastern United States and Canada tended to restrict the demand for California barley except for choice malting quality, and Pacific Coast exports for the season to date have been but little larger than last season, although the crop was about 4,500,000 bushels larger. The expected reduction in competition, however, may be offset by a large carryover. Stocks on farms and in trade channels in California at the first of December were materially greater than a year ago, which indicates a carryover at the beginning of the new crop year, June 1, greater than that on the same date a year ago.

